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SEMICONDUCTOR DEVICE MANUFACTURING METHOD

Inventor: Shigeru Toyama,  
NEC,  
5-33-1 Shiba, Minato-ku,  
Tokyo

Applicant: NEC,  
5-33-1 Shiba, Minato-ku,  
Tokyo

Agent: Yoshiyuki Iwasa, patent  
attorney

[There are no amendments to this patent.]

Claim

Semiconductor device manufacturing method characterized in that, in a manufacturing method for semiconductor devices made by electrically connecting an element or device formed on a first semiconductor substrate and an element or device formed on a second semiconductor substrate, it includes an element or device connection method composed of a process wherein, on a first semiconductor substrate, a terminal electrode having a structure wherein silicon, to which a high concentration of impurities has been added, and a film made from a type of metal that will form a silicide by a thermal reaction with the silicon--in a ratio that will produce excess silicon to which a high concentration of impurities has been added following the reaction--are stacked with the side having the silicon to which a high concentration of impurities has been added facing toward the first semiconductor substrate, and on a second semiconductor substrate, with terminal electrodes made from the same metal as the aforementioned metal film being disposed so that, when the first and second semiconductor substrates face each other, the terminal electrodes that will bond the elements or devices are in the correct relative positions, and after projecting shapes of approximately an equal height are formed on a terminal electrode on at least one of the semiconductor substrates, with the first and second semiconductor substrates being positioned facing each other and subjected to a heat treatment with the first and second semiconductor substrates held so that the terminal electrodes to

be bonded to each other are tightly pressed together, with a solid-phase siliciding reaction being produced between the silicon to which a high concentration of impurities has been added on the terminal electrode of the first semiconductor substrate and the metal film provided on its surface, and with this reaction extending to all of the metal film on the surface of the silicon to which a high concentration of impurities has been added, as well as to part or all of the terminal electrode of the second semiconductor substrate.

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